

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows, substituting any amended claim(s) for the corresponding pending claim(s):

1. (Currently Amended) For use in an oscillator, a two port differential mode SAW resonator circuit for providing low phase noise in hostile environments comprising:
 - a two port SAW resonator having two inputs and two outputs;
 - at least one inductance coupled to one or more inputs or outputs of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out reduce a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW resonator at a selected frequency such that any residual stray capacitance seen across the inputs or outputs has a magnitude less than a magnitude of a motional capacitance within the equivalent circuit for the SAW resonator; and
 - at least one variable tuning capacitance connected in series with the one or more inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance may be employed to alter a resonant frequency of the SAW resonator circuit.

2. (Original) The two port differential mode SAW resonator circuit as set forth in Claim 1 wherein the at least one inductance further comprises an inductor connected across the inputs of the SAW resonator.

3. (Currently Amended) The For use in an oscillator, a two port differential mode SAW resonator circuit as set forth in Claim 2 for providing low phase noise in hostile environments comprising:

a two port SAW resonator having two inputs and two outputs;
at least one inductance coupled to one or more inputs or outputs of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW resonator at a selected frequency, wherein the at least one inductance further comprises an inductor connected across the inputs of the SAW resonator and wherein the inductor further comprises a center tap inductor connected at a center tap through a resistance to a ground voltage level; and
at least one variable tuning capacitance connected in series with the one or more inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance may be employed to alter a resonant frequency of the SAW resonator circuit.

4. (Original) The two port differential mode SAW resonator circuit as set forth in Claim 1 wherein the at least one variable tuning capacitance further comprises:

a first varactor diode serially connected within a first differential signal line to a first input of the SAW resonator; and

a second varactor diode serially connected within a second differential signal line to a second input of the SAW resonator.

5. (Currently Amended) ~~The For use in an oscillator, a two port differential mode SAW resonator circuit as set forth in Claim 4, further for providing low phase noise in hostile environments comprising:~~

a two port SAW resonator having two inputs and two outputs;
at least one inductance coupled to one or more inputs or outputs of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW resonator at a selected frequency;

at least one variable tuning capacitance connected in series with the one or more inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance may be employed to alter a resonant frequency of the SAW resonator circuit, wherein the at least one variable tuning capacitance further comprises:

a first varactor diode serially connected within a first differential signal line to a first input of the SAW resonator; and
a second varactor diode serially connected within a second differential signal line to a second input of the SAW resonator;

a first resistor connecting the first differential signal line to a tuning voltage level; and
a second resistor connecting the second differential signal line to the tuning voltage level.

6. (Original) The two port differential mode SAW resonator circuit as set forth in Claim 5, further comprising:

blocking capacitances serially connected within each of the first and second differential signal lines.

7. (Original) The two port differential mode SAW resonator circuit as set forth in Claim 1 wherein adjusting a capacitance of the at least one variable tuning capacitance alters the resonant frequency for the SAW resonator circuit by altering a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and the at least one tuning capacitance.

8. (Currently Amended) An oscillator comprising:

a differential amplifier; and

a two port differential mode SAW resonator circuit connected in a series loop with the differential amplifier for providing low phase noise in hostile environments comprising:

a two port SAW resonator having two inputs and two outputs;

at least one inductance coupled to one or more inputs or outputs of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out reduce a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW resonator at a selected frequency such that any residual stray capacitance seen across the inputs or outputs has a magnitude less than a magnitude of a motional capacitance within the equivalent circuit for the SAW resonator; and

at least one variable tuning capacitance connected in series with the one or more inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance may be employed to alter a resonant frequency of the SAW resonator circuit.

9. (Original) The oscillator as set forth in Claim 8 wherein the at least one inductance further comprises an inductor connected across the inputs of the SAW resonator.

10. (Currently Amended) The An oscillator as set forth in Claim 9 comprising:
a differential amplifier; and
a two port differential mode SAW resonator circuit connected in a series loop with
the differential amplifier for providing low phase noise in hostile environments comprising:
a two port SAW resonator having two inputs and two outputs;
at least one inductance coupled to one or more inputs or outputs of the SAW
resonator, wherein the at least one inductance is connected and sized to approximately tune
out a stray capacitance seen across the inputs or outputs within an equivalent circuit for the
SAW resonator at a selected frequency; and
at least one variable tuning capacitance connected in series with the one or
more inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance
may be employed to alter a resonant frequency of the SAW resonator circuit,
wherein the inductor further comprises a center tap inductor connected at a center tap
through a resistance to a ground voltage level.

11. (Original) The oscillator as set forth in Claim 8 wherein the at least one variable tuning capacitance further comprises:

a first varactor diode serially connected within a first differential signal line to a first input of the SAW resonator; and

a second varactor diode serially connected within a second differential signal line to a second input of the SAW resonator.

12. (Currently Amended) ~~The An oscillator as set forth in Claim 11, further comprising:~~

a differential amplifier;

a two port differential mode SAW resonator circuit connected in a series loop with

the differential amplifier for providing low phase noise in hostile environments comprising:

a two port SAW resonator having two inputs and two outputs;

at least one inductance coupled to one or more inputs or outputs of the SAW

resonator, wherein the at least one inductance is connected and sized to approximately tune

out a stray capacitance seen across the inputs or outputs within an equivalent circuit for the

SAW resonator at a selected frequency; and

at least one variable tuning capacitance connected in series with the one or

more inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance

may be employed to alter a resonant frequency of the SAW resonator circuit, wherein the at

least one variable tuning capacitance further comprises:

a first varactor diode serially connected within a first differential

signal line to a first input of the SAW resonator; and

a second varactor diode serially connected within a second differential

signal line to a second input of the SAW resonator; and

a first resistor connecting the first differential signal line to a tuning voltage level; and

a second resistor connecting the second differential signal line to the tuning voltage level.

13. (Original) The oscillator as set forth in Claim 12, further comprising:

blocking capacitances serially connected within each of the first and second differential signal lines.

14. (Previously Presented) The oscillator as set forth in Claim 8 wherein adjusting a capacitance of the at least one variable tuning capacitance alters the resonant frequency for the SAW resonator circuit by altering a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and the at least one tuning capacitance and wherein the differential amplifier and the differential mode SAW resonator circuit form a differential amplifier providing common mode rejection.

15. (Currently Amended) For use in an oscillator, a method of tuning a SAW resonator circuit while maintaining low phase noise comprising the steps of:

applying a differential input signal to a two port differential mode SAW resonator having two inputs and two outputs, wherein a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW resonator is ~~approximately tuned out reduced~~ at a selected frequency such that any residual stray capacitance seen across the inputs or outputs has a magnitude less than a magnitude of a motional capacitance within the equivalent circuit for the SAW resonator; and

adjusting a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and at least one variable tuning capacitance connected to an input or output of the SAW resonator.

16. (Original) The method of claim 15 further comprising:

exciting at least one inductance coupled across the inputs or outputs of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out the stray capacitance at the selected frequency.

17..(Currently Amended) The For use in an oscillator, a method of claim 16, wherein the step of tuning a SAW resonator circuit while maintaining low phase noise comprising:

applying a differential input signal to a two port differential mode SAW resonator having two inputs and two outputs, wherein a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW resonator is approximately tuned out at a selected frequency;

adjusting a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and at least one variable tuning capacitance connected to an input or output of the SAW resonator; and

exciting at least one inductance coupled across the inputs or outputs of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out the stray capacitance at the selected frequency further comprises: exciting and wherein the at least one inductance is a center-tap inductor connected at the center tap through a resistance to a ground voltage level.

18. (Original) The method of claim 15 wherein the step of adjusting a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and at least one variable tuning capacitance connected to an input or output of the SAW resonator further comprises:

altering a tuning voltage applied to first and second varactor diodes serially connected within first and second differential signal lines to the inputs or outputs of the SAW resonator.

19. (Original) The method of claim 15 further comprising:

employing a differential oscillator including the SAW resonator circuit.

20. (Original) The method of claim 19 further comprising:

altering a frequency at which the differential oscillator oscillates by adjusting the total capacitance for the series resonator circuit.

Please add the following new claim:

21. (Newly Added) For use in an oscillator, a two port differential mode SAW resonator circuit for providing low phase noise in hostile environments comprising:

a two port SAW resonator having two inputs and two outputs;

at least one inductance coupled to one or more inputs or outputs of the SAW resonator; and

at least one variable tuning capacitance connected in series with the one or more inputs or outputs of the SAW resonator,

wherein the at least one inductance is connected and sized to increase a tune range of a resonant circuit formed by a motional capacitance, a motional inductance and a motional resistance within an equivalent circuit for the SAW resonator and the at least one variable capacitance.